



Charles River Watershed Association

## Retrofit Costs Study

In March, 2009, CRWA completed its Commercial Property Retrofit Study<sup>1</sup>, a project to assess the potential costs of retrofitting existing large properties to comply with the new state and federal stormwater regulations currently proposed in the Charles River Watershed. The project was completed with the help of Rich Claytor, P.E., of Horsley Witten, Inc., who has significant working experience with the design and installation of stormwater retrofits that use Low Impact Development (LID) techniques in the New England region.

The retrofit designs developed for this Study ranged in cost from \$8,800 per acre to \$20,000 per acre. With an expected lifespan of 20 years, the estimated annualized cost<sup>2</sup> of these retrofits, including maintenance costs, ranges from approximately \$1,200 to \$2,600 per acre per year. The table below summarizes the results of the Study.

	Acres	Soils	Site constraints	BMPs used	Construction cost	Cost per acre
Site A	2	A	none	Bioswales, rain gardens, cisterns, leaching catch basins	\$35,000	\$17,500
Site B	2	B	Zone II	Lined bioswales, rain gardens, cisterns, tree box filters	\$40,000	\$20,000
Site C	2	B	Wetlands, high groundwater	Gravel wetland; cisterns	\$29,000	\$14,500
Site D	2	D	Contaminated soils	Lined bioswales, cisterns, trade	\$29,000 + trade	\$14,500 + trade
Site E	20	A	none	Bioswales, raingardens, cisterns	\$271,320	\$13,566
Site F	20	B	Zone II	Lined bioswales, lined raingardens, cisterns, tree box filters	\$358,782	\$17,939
Site G	20	B	Wetlands, high groundwater	Gravel wetland, cistern	\$176,850	\$8,843
Site H	20	D	Contaminated soils	Lined bioswales, cisterns, trade	\$281,934 + trade	\$14,100 + trade

<sup>1</sup> The full Report is available at <http://www.crwa.org/projects/stormwater/swregs.html>

<sup>2</sup> Calculated with a 5% interest rate